REMOVAL OF ARSENIC (V) FROM AQUEOUS SOLUTION BY USING SILYLATED MCM-41

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ABSTRACT

OPTIMIZATION STUDIES ON ARSENIC (V) REMOVAL BY USING SILYLATED MCM-41

In this study, MCM-41 was synthesized by using cetyltrimethylammonium bromide (CTAB) as structure directing surfactant, functionalized with trimethylchlorosilane and used as adsorbent for the toxic metal ions i.e. arsenic (V) in aqueous solution. The synthesized and functionalized MCM-41 was characterized using Fourier Transform Infra Red (FTIR). The Induced Coupled-Plasma (ICP-OES) was applied in optimization study for detection of arsenic (V) in aqueous solution which including effect of pH, effect of contact time at different initial concentration, effect of adsorbent dosage and effect of temperature. Results demonstrate that organosilane functionalized MCM-41has low adsorption capacity for arsenic since it can only remove less than 50 % of arsenic in aqueous solution. The highest amount of arsenic adsorbed was 50.56 % in 50 mg/L of arsenic concentration after 2 hours of the test in pH 7 under stirring condition.